

Remarks

Claims 1-35 are pending, with claims 1-24 and 26-35 standing as rejected, and claim 25 standing as allowable but for its dependence on a rejected base claim. By amendments herein, the applicant cancels claims 1-20 and 31-35, amends independent claim 21 and selected claims depending from it, and adds new claims 36-41. Reconsideration of the amended claims and entry of the new claims are respectfully requested in light of the below arguments.

First, the applicant appreciates the thorough discussion provided by the examiner in his Detailed Action Letter accompanying the current Office Action and welcomes the well articulated presentation of the issues as seen by the examiner. It is believed that the claim amendments made herein address or render moot all such issues. For example, the cancellation herein of claims 1-20 and 31-35 renders moot all rejections made against them, thus shifting the focus of the applicant's arguments to independent claim 21 in its amended form, and to newly added independent claim 36. Claim 21 is directed to a bias circuit and associated RF amplifier, while claim 36 focuses on just the bias circuit. Each of these claims and their dependents is discussed in turn.

Claim 21 stands rejected as being obvious over Mattilla (of record) in view of the prior art shown in Fig. 1 of the instant application. Respectfully, the examiner's obviousness argument is based on improper hindsight "cutting and pasting" of strategic selected elements between the circuit shown in the instant application's Fig. 1 and the circuit(s) shown in Figs. 1 and 2 of Mattilla. The bias circuit of Mattilla includes an operational amplifier circuit that generates a voltage reference signal that can be varied as a function of a transmit power control signal and an analog/digital mode control signal. The voltage reference signal output by the operational amplifier circuit is used to drive a Bipolar Junction Transistor (BJT) circuit that, in turn, provides the desired bias signal used to bias a RF device of interest.

The use of BJT outputs on the bias circuit of Mattilla stems from the aim of Mattilla to provide the appropriate magnitude "idle currents" to the RF devices being biased—see the end

of Mattilla's summary and elsewhere. Typically, an idle current denotes a baseline or reference current passed through a RF transistor (from drain-to-source) and set at a desired magnitude to move the RF transistor to a desired operating point. A careful reading of Mattilla strongly suggests that this is the use being made of the bias currents being output by the BJTs Q30, Q40, and Q50 in Fig. 2 of Mattilla. However, whatever they are being used for, the actual bias signals in Mattilla are generated not by the operational amplifier but by the BJTs.

The upshot of these facts is that one skilled in the art would not be motivated to take just the operational amplifier portion of Mattilla's bias circuit rather than the whole bias circuit, and then modify that excerpted portion for use in the manner taught by the instant application unless the artisan's view of Mattilla already was illuminated by the spark of invention captured in the claimed invention. Mattilla does not address itself to the problems associated with direct gate biasing, nor does it even mention that biasing problems might arise in such contexts. Mattilla does not use an operational amplifier circuit to provide a biasing signal directly to a RF device and does not suggest that such an approach is desirable for any reason, much less for the reasons addressed in the instant application.

However, claim 21 is amended herein by the incorporation of claim 25 into it. The applicant notes that the only limitation not taken from claim 25 is the recitation of a non-inverting operational amplifier configuration. However, it is believed that claim 21 as amended is patentable without specifying whether the claimed operational amplifier circuit is inverting or non-inverting. Indeed, the specification makes clear that either configuration can be used. Thus, as amended, claim 21 now includes the limitation that "said bias amplifier" comprises "an operational amplifier configured to have a desired gain relative to the bias reference voltage and further configured to have an output bandwidth enabling it to quash signal disturbances feeding back from the bias input of the RF device that are not blocked by the reactive circuit and thereby maintain a fixed bias voltage at the bias amplifier output."

Newly added claim 36 is similar but its focus is on the bias circuit in particular, rather than on the overall amplifier circuit as claimed in claim 21. As drafted, claim 36 includes the following limitations that are not taught or suggested by any of the cited references:

an operational amplifier circuit to provide a low-impedance reference voltage at
an output of the operational amplifier circuit;
a current-limiting resistor coupled in series with the output of the operational
amplifier circuit to limit bias current into a gate of the RF transistor; and
a RF filter circuit to couple the current-limiting resistor to the gate of the RF
transistor, said RF filter circuit configured to block RF input signals
applied to the gate from the bias circuit; and
said operational amplifier circuit configured to have an output bandwidth enabling
it to quash signal disturbances fed back from the gate of the RF transistor
over a range of frequencies not blocked by the RF filter circuit and
thereby maintain the reference voltage at a substantially fixed value.


As with amended claim 21 and its dependents, it is believed that claim 36 and its dependent claims stand in condition for allowance.

Therefore, the applicant respectfully requests the examiner to reconsider the instant application in light of the above arguments and amendments. It is believed that the amendments herein place the instant application in condition for immediate allowance and the applicant looks forward to an indication as such by the examiner. The undersigned agent would welcome a phone call from the examiner if the examiner does not believe that all issues have been resolved, so that any such concerns can be expeditiously resolved.

Respectfully submitted,

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